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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 6, 1943



Avengers

See Page 153

A SCIENCE SERVICE PUBLICATION

## Do You Know?

In the 1,100 mile stretch of the *Aleutian Islands* there is no timber.

North Africa is one of the world's largest producers of *phosphate* rock.

In the United States in 1942 approximately 93,000 persons were killed by accidents, and over 9,000,000 injured.

The Great Barrier Reef, 1,200 miles long, off the northeast coast of Australia, is the longest *coral reef* in the world.

Only one-fourth as much metal is used in the new wartime wood *bed springs* as was used in the all-metal pre-war springs.

A victory garden *fertilizer* approved by the U. S. Department of Agriculture contains 3% nitrogen, 8% phosphoric acid, and 7% potash.

The American output of *magnesium* has increased a hundredfold since 1939, and the aluminum output is now seven times what it was that year.

A rod of *tungsten* <sup>feet</sup>  $5\frac{1}{2}$  inches long and slightly larger than ~~the lead of a pencil~~ <sup>lead</sup> can be made into a strand 469 miles long, the size of the wire used in the three-watt lamp.

Over 7,500,000 pairs of *stockings*, weighing about 372,000 pounds, were turned in during two months beginning Nov. 15, 1942, as a contribution of American women to the silk and nylon salvage program.

## Question Box

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### PSYCHOLOGY

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Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

A total of at least 18,000,000 *Victory Gardens* are needed this year to meet food requirements.

The largest known reserve of high-grade *iron* ore in the world is reported to be in the State of Minas Geraes, Brazil.

Because *anti-freezing* solutions containing calcium chloride and other salts will permanently injure automobile engines, the use of these solutions is forbidden in all Government-owned cars.

Curtailement in the manufacturing of hairpins will save an estimated 57 tons of metal a year.

Although in the beginning the United States had approximately 900,000,000 acres of excellent *forests*, only about 200,000,000 acres are left.

Blow-holes and similar foundry imperfections in metal *castings* may be satisfactorily sealed by forcing a new sealing solution into the pores under pressure and then baking the casting.

## SCIENCE NEWS LETTER

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## CHEMISTRY

# New War Gases

**New class of blistering agents known as nitrogen mustards is reported by Army officer. They burn skin and, if they get into eyes, cause blindness.**

► THE PRESENT conflict has introduced a new class of war gases known as the nitrogen mustards, a group of blistering agents, Brigadier General Alden H. Waitt, author of the new book, *Gas Warfare*, states. (*Infantry Journal*, March.)

If the nitrogen mustards get into the eyes, they may cause blindness. Their vesicant action (blister-causing) is not quite as bad as that of the mustard gas used in World War I. Like the well-known mustard gas, they have a delayed action of several hours before the blisters appear—more or less after the fashion of poison ivy. If heavy concentrations of the nitrogen mustards are breathed into the lungs, a fatal action, which may be delayed as much as four days, may result, General Waitt reports.

One of the greatest sources of danger, with these chemical warfare agents, is the difficulty of detecting them. They are nearly odorless, at most having a faintly fishy smell, instead of the rather strong garlic scent of "straight" mustard gas. If nitrogen mustard bombs are dropped during a blitz with high explosives they are very likely to go undetected. Several color tests with sensitized papers, crayons, etc., now available for other war chemicals, will detect the presence of nitrogen mustards as well.

They can be kept out of eyes and lungs by prompt use of the gas mask, and they can be prevented from contact with the skin by means of the same kind of protective clothing that has been devised for use against the older mustards. Soap and water are good decontaminating agents for clothing; bleaching powder solutions and light petroleum extracts for buildings, furniture, etc.

Like the older mustard gases and lewisite, the nitrogen mustards are not really gases. They are liquids, or even easily melted solids, but because they are thrown into the air in the form of an impalpably fine spray or mist they are called gases for convenience. They can be dropped in bombs, thrown in artillery shell, or sprayed from special containers on airplanes.

Gen. Waitt gives concise first-aid directions:

"The gas mask should be put on as soon as the gas is detected, and worn continuously until all danger of exposure has passed. As in the case of other vesicant agents, liquid-splashed clothing should be removed at first opportunity. A nitrogen mustard casualty should not remain in a heavily contaminated area unless the tactical situation makes his removal impractical.

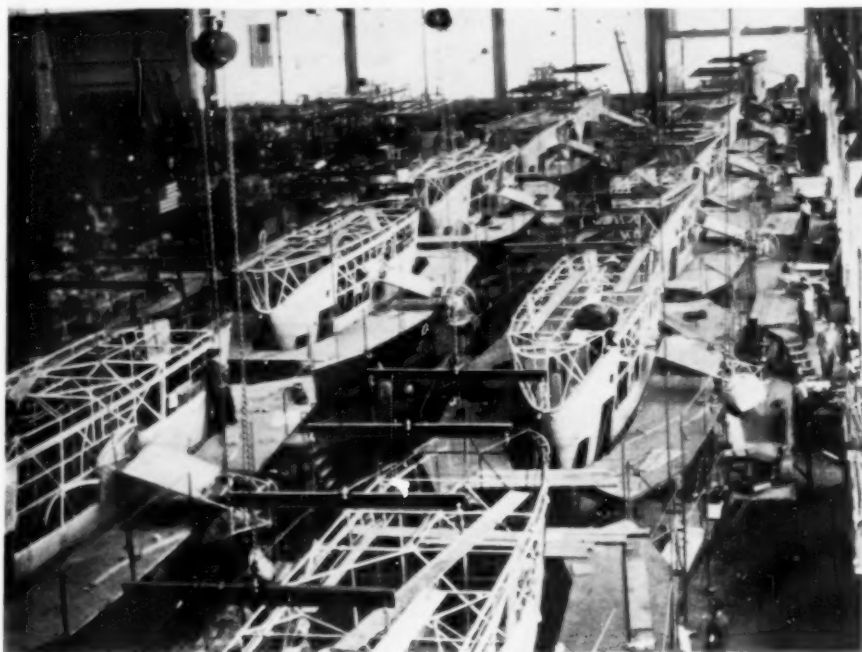
"If liquid agent has entered the eye, it must be washed out as quickly as possible, using water from the canteen for this purpose. This irrigation can be done most effectively by another man. But in the absence of immediate help, the individual must attempt to flush his own eyes without delay. This is best done by lying on your back. The affected eye is pulled open by traction on the lower lid with the left hand, and water is slowly poured into the eye from

the canteen held close to the eye with the right hand. The eye should be moved from side to side, and up and down, during the washing. This process should be continued for about five minutes if sufficient water is available.

"Protective ointment should be used as for other blister gases. Since the ointment merely dilutes but does not destroy nitrogen mustard, it is necessary to wash off the film of ointment with water, or preferably with soap and water. If the contamination is positively identified as nitrogen mustard, soap and water alone may be used for decontamination, but it is safer when doubt exists to use protective ointment first, followed by soap and water, or plain water. If redness has appeared on the skin the use of the ointment should be omitted, and soap and water alone used. Blisters should not be opened until medical treatment is available."

Where eyes or skin have become contaminated this mischief has already been done, Gen. Waitt states. However, there are standard eye and nose drops in the Army first-aid kit that will afford relief from pain in eyes and nose and an ointment that will ease itching and irritation of the skin.

*Science News Letter, March 6, 1943*



**BLIMP CARS**—This is just a portion of a long production line at the Goodrich Aircraft Corporation plants in Akron where the streamlined control cars for U. S. Navy blimps are being assembled. Construction at the beginning of the line starts with the cars inverted. Half way through, they are turned over, as shown here, for attaching the motors to the outriggers and for other final touches.



GENERAL SCIENCE

# Science Talent Institute

**Winners of nation-wide Science Talent Search, picked from among outstanding high school seniors, are addressed by leading scientists.**

► A FIVE-DAY Science Talent Institute in Washington (Feb. 26-March 2) was the culminating event of the Second Annual Science Talent Search, conducted by the Science Clubs of America and made possible financially by the Westinghouse Electric & Manufacturing Company. This issue of SCIENCE NEWS LETTER reports some of the highlights of the sessions attended in Washington by the youthful winners. The next issue will continue this report.

## Prepare to Serve

► PREPARE TO SERVE the nation technically in war and peace. This was the advice given to youthful scientists by leaders in science and engineering in the occupational opportunities session of the Science Talent Institute at Washington attended by the 40 winners of the Science Talent Search for the Westinghouse science scholarships. Excerpts from some of the discussions follow:

*Dr. Leonard Carmichael, president of Tufts College and Director of the National Roster of Scientific and Specialized Personnel:*

There never has been a period in the history of America, when the possession of scientific ability was more important for the national welfare than it is today. Because you have early displayed a talent for science you are in an enviable position in being able to start your advanced education in science before you become old enough to be directly available for military service.

It is your patriotic duty to advance as rapidly as possible in scientific proficiency so that you may gain in professional knowledge in science and engineering and thus be able to serve the nation through your specialized skills.

The war in which our nation is now totally engaged is peculiarly a war of scientists and technologists. It would be a mistake to underestimate the scientific and engineering skill of our armies in this war. The victory of the United Nations can only come if every resource

of the free peoples be placed at the service of the Army and Navy in this war.

When the present war is at length over you will then also, as scientifically trained Americans, have skills which will be valuable to your nation in solving the many new problems which will arise at the conclusion of hostilities. Scientists and engineers must cooperate with other skilled Americans in producing the new world that must emerge after the present conflict.

*Dr. J. W. Barker, Dean of Engineering, Columbia University, and Special Assistant to the Secretary of Navy:*

Never before in recorded history has any war approached this World War II in the extent to which science and engineering applications have been utilized. Even if one rates the various wars of the past in terms of the percentage application of the then known scientific and engineering apparatus, this present war would still rate "tops." Therefore the Navy is vitally interested in developing all those who possess scientific and engineering aptitudes to the very highest possible extent. We applaud this Science Talent Institute on its work and we congratulate all of you in being selected for these honors.

To conduct this war our country has converted from its normal peace-time production a very large proportion (higher than in any previous time) of our industries to building instruments of war. From the little 10-pound "walkie-talkie" transceiver to the 16"-gun turrets of our mighty battleships all these are being made where automobiles, washing machines, electric refrigerators and radios were being made.

From the many new and startling developments researched, pioneered and produced for war there will inevitably be some that will have vast post-war peace-time applications. Whole new industries developed in these war years will continue into the post-war period to supply entirely new consumer demands. There will be challenging opportunities for con-

structive service to our civilization. There will be enormous areas of war destruction which will have to be rehabilitated. There will be new homes and factories to be built to replace those bombed out of existence. There will be famine and pestilence in the devastated areas calling for the highest type of public health service and relief. There will be war casualties to be cared for and retrained to usefulness. There will be perplexing problems of a social, economic and political nature for which we must find solutions if our civilization is to endure, let alone progress to the higher levels which science and engineering will open up. There will be immense realms of scientific exploration opened because every time we push outwards the radii of scientific investigation we increase the perimeter of the circle by that well-known "pi" relationship.

*George W. Bailey, president of the American Radio Relay League:*

Some day this war will end; then many radio men and women will return to their peace-time pursuits, and continue amateur radio as a hobby. Others who became professional radio engineers through their interests in amateur radio will continue in the radio profession. War has developed the most extraordinary devices which will find immediate use in commercial life. I wish that I might tell you about some of them, but that must wait until the war ends. Everyone knows that television was nearly ready for commercial use when the war broke out. I expect that when peace comes we shall find that wartime developments have made extraordinary strides in television and other devices using the same principle.

Radio communication and radio devices are absolutely vital to our fighting forces. Our country needs skilled radio operators, technicians and engineers. There is no better way to devote your talents to the service of your country than by starting now to prepare for such a career.

*Science News Letter, March 6, 1943*

Shipping cases for military, lend-lease, and home supplies and materials will require more than 11 billion board feet of lumber this year, nearly three times the average amount used in the pre-war period.

BIOLOGY

# The Biological Future

By DR. EDWIN G. CONKLIN

*An address before the Science Talent Institute at Washington being attended by 40 winners of the Second Annual Science Talent Search competing for the Westinghouse Science Scholarships. Dr. Conklin is President, American Philosophical Society, and President, Science Service.*

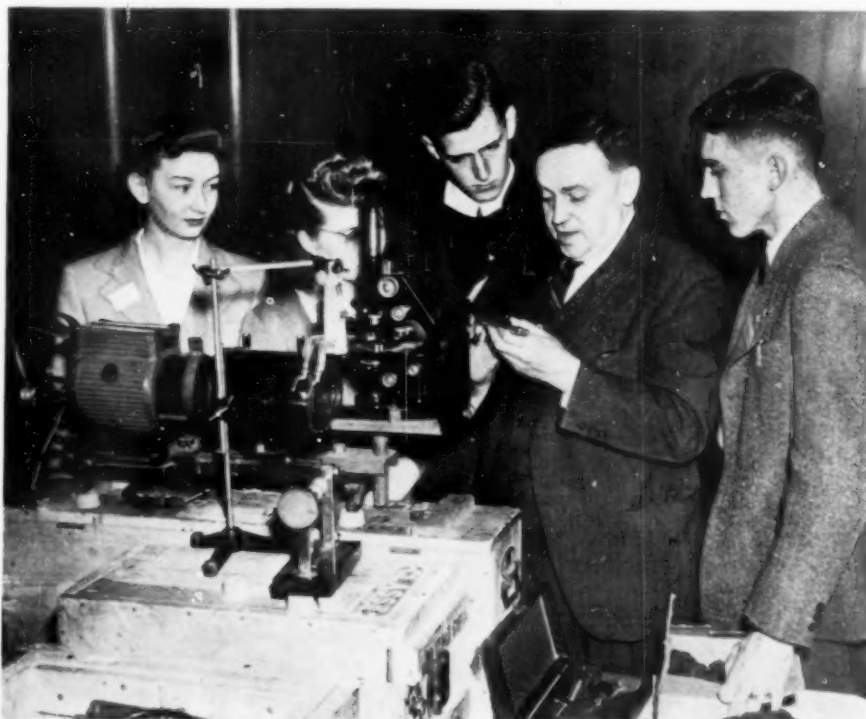
FIRST OF ALL I want to offer my congratulations to you future scientists of America, to the "Forty Immortals." I don't know how it happened that the organizers of this enterprise fixed upon the number *forty* to be selected. They may have had in mind the *Academie francaise*, founded more than 300 years ago, whose membership is always limited to the "Forty Immortals." At least the selection of forty out of thousands shows that you are a highly selected group. But lest you may get the big head it is well for you to remember that most of you won by a rather narrow margin. The judges have had difficulty in separating the sheep from the goats, many of them look alike and you may be one of those.

I must also remind you that any future distinction in science that you may win will be based on hard work. When I was a schoolboy we practiced penmanship in copybooks, in which we copied some twenty times on a page some famous saying or maxim. One of these maxims which I have never forgotten, and which I hope you may take to heart is this: "There is no excellence without great labor." Louis Pasteur, whom the people of France have rated greater than Napoleon, and of whom Sir William Osler said, "He was the most perfect man who ever entered the Kingdom of Science," once said in an address to young persons: "I do not think that I have ever spoken for the first time with a student without saying to him, Work perseveringly. Work can be made a pleasure, and alone is profitable to man, to his city, to his country—If work should be the very life of your life, if the cult for great men and great things should be associated with your every thought, that is still not enough. Try to bring into everything you undertake the spirit of scientific method, founded on the immortal work of Galileo, Descartes, and Newton,"—and as a biologist I add, "of Pasteur and Darwin."

The purpose of science is to understand and control as far as that is possible the phenomena of nature. The kind of science that aims to *understand* is called *pure science*; that which aims at *control*, *applied science*. In the midst of war the world is more interested in applied than in pure science, but all applications of science are based upon the results of pure science. I heartily sympathize with an admirable article by Professor P. W. Bridgman of Harvard, published in *Science* for February 12, in which he points out the mistake of supposing that the chief aim of science is material success in war or in peace. We have all heard the maxim, "Science is power," and many think that it is fame and wealth. These may result from its applications, but pure science has a larger usefulness; it not only makes possible the applications, but it satisfies the human

craving to know, and it broadens the minds and ennobles the characters of the searchers for truth.

But I am requested to bring you some message from the science of biology, the science of life, rather than of death, of peace, rather than of war. Biologists have not been drawn in large numbers into the technical services of war. The colleges and universities have been stripped of many of their physicists, chemists, engineers, even mathematicians, but the biologists have been left to teach medical students or have been used in scientific studies of agriculture, health, and nutrition. Biology is in times of war less applied than these other subjects, but it is no less important. Nothing concerns man so much as understanding life,—his own life and that of animals and plants. The great lesson of evolution is not that we are descended from monkeys, (which we are not) but the fact that all life, that of plants, animals and men, is fundamentally alike. So we study the cells of *Ascaris*, the heredity of *Drosophila*, the effects of X-rays or colchicine on *Datura*, and a thousand other worthless animals



**GERM KILLER**—Dr. Harvey C. Rentschler, director of research of the Lamp Division, Westinghouse Electric and Manufacturing Co., is shown demonstrating to a group of Science Talent Search winners the effectiveness of ultra-violet light in killing bacteria. Left to right are shown: Catherine Clara Ens, of Dayton, Ohio, Gloria Indus Lauer, of Ames, Iowa, Henry Hiram Kohl, of Exeter, New Hampshire, Dr. Rentschler and John Ellis Gill of Las Cruces, New Mexico.

and plants, not because we are interested in them, but because they all have applications to man.

It was suggested that I talk to you on the Biological Future. Well, this speech is behind us and all the future is before. Predictions are always precarious and almost all the "Sensational Science" of which the newspapers and the public are so fond, is the science of the future, the prediction of things to come. A few years ago an enterprising publisher issued more than 100 booklets on the future of everything from electricity to swearing. I am not going to add to this too long list of prophecies. But you are going to be leaders in science; some of you are going to be leaders in biology. What opportunities will biology offer you for the increase of knowledge? I shall list only a few fields where there is great need of more knowledge.

#### Opportunities Ahead

1. Which one of you will be the Darwin of the future to discover the unknown factors of evolution? It is generally recognized that some great factor, perhaps as great as Darwin's Natural

Selection, is still undiscovered. Biology is today in much the same position that physics was in before the discovery of radio-activity. Who will be the Madame Curie to find the missing element?

2. Who will be the Pasteur of tomorrow to discover the causes of cancer? This great discovery may come from a biologist, as Pasteur's discoveries in the biology of infection and immunity came from a chemist. Several years ago the Director of the Crocker Cancer Institute said to me, "We are waiting for you biologists to give us a lead."

3. Who among you will be the Morgan of the future to find out how the genes, those inheritance factors in the chromosomes, direct the development of a plant or animal or man. We know that they do direct this development, but the manner of their action is largely unknown.

4. Finally, who among you will be the

Columbus to sail the uncharted sea between the living world and the lifeless one. This has been the great unknown, by some thought to be unknowable, but recent discovery of viruses, bacteriophage, and things so small that they go through the finest porcelain filters, seem to bridge this gulf between the living and the lifeless. The new electron microscope offers one means of transport into this newest world. Who will embark with the Admiral of this Ocean Sea.

I close with another quotation from that great scientist, Louis Pasteur, which has been inscribed on the walls of his tomb in the Pasteur Institute in Paris: "Blessed is he who carries within himself a God, an ideal, and who obeys it—ideal of art, ideal of science, ideal of the gospel virtues; therein lie the springs of great thoughts and great actions; they all reflect light from the Infinite."

*Science News Letter, March 6, 1943*

#### NUTRITION

## Food Is a War Weapon

All major powers have nutrition problems. Government responsibilities in field increase. Fight food waste by eating what is on your plate.

By DR. M. L. WILSON

Associate Director in Charge of Nutrition,  
Office of Defense Health & Welfare Services

*Excerpts from Science Service's "Adventures in Science" program over the Columbia Broadcasting System during the Science Talent Institute attended by the 40 winners of the Second Annual Science Talent Search for the Westinghouse Scholarships.*

➤ FOOD ALWAYS plays a dominant part in wars. It is a weapon, just as guns and ammunition, for men cannot fight when they lack strength to march. Nutrition, and through it, the ability to do a good day's work, is of the utmost importance in wartime. No country is free from problems of nutrition. All the major powers are concerned with it. In this country and Great Britain, however, much is being done to keep civilian, as well as armed-force strength in that state of well being that can only be achieved when the right food is eaten.

Developments in nutrition are paralleling those in sanitation. When people first heard of the germ-theory of disease, they began boiling their own water, watching their milk supply. Gradually

public sanitation developed and such matters became governmental responsibilities. For some time, well-informed people have been watching their eating habits, but recently groups and nations have come to recognize their responsibility for promoting good nutrition. Great progress has already been made in the medical and public health fields through acceptance of nutrition.

It is up to each individual to learn what to eat for health and to put that knowledge into practice. Fight food waste by eating what is on your plate. Help the local nutrition committees plan for food conservation demonstrations. Help with home gardens and community canning projects.

These are not small things. These are large things, for it is only by adding all these small things together that we can build the large. One man does not make an army, but one man, plus another and many others do. So it is with nutrition and science. Everyone working at what he can do best, all of these added together to make the whole—that hastens victory, and gives us strength to build a better world.

*Science News Letter, March 6, 1943*



**INSTITUTE SPEAKER**—Dr. M. L. Wilson, associate director in charge of nutrition of the Office of Defense Health and Welfare Services, speaking on the *Adventures in Science* program from the Nutrition Luncheon of the Science Talent Institute.





**VITA-MIN-GO**—After the Nutrition Luncheon, the Science Talent Search winners played a game based on the vitamin content of the food eaten. The game was directed by Miss Marjorie M. Heseltine, director of nutrition of the U. S. Children's Bureau. Left to right, William Weidman Piper, of Columbus, Ohio, Dr. Stuart Henderson Britt, one of the judges, G. Edward Pendray, of Westinghouse and the Institute staff, and Miss Heseltine.

## CHEMISTRY

## Thorium in the Sun

Radioactive element, rare on earth is discovered on sun by means of spectrum lines. It was found to occur only in the ionized state.

► **DISCOVERY** of the rare radioactive element thorium in the sun is announced by Dr. Charlotte E. Moore of the Princeton University Observatory and Dr. Arthur S. King of the spectroscopic laboratory at Mt. Wilson. The element was found to occur in the ionized state only.

Although search for thorium started in 1938, the investigation was hindered by lack of suitable experimental work on the spectrum of the element in the laboratory under different conditions of temperature and magnetic field strength. When such experimental work recently became available the search was begun anew and this time was successful.

Basis for the discovery was chiefly detection of lines in the solar spectrum that matched the lines of thorium most easily produced in the laboratory and which are generally the strongest lines of an element. These are known as its ulti-

mate lines and if they are absent it is hopeless to look for any others.

One line of thorium which stood out in strength above all others and was therefore believed to be its ultimate line coincided almost exactly with a faint unidentified line in the solar spectrum. Other strong lines of the ionized element could only be tentatively identified with solar lines. But as the very strongest line of thorium is represented so weakly in the sun the absence of the other lines is not considered surprising.

Two of the strongest lines of neutral thorium coincided with solar lines but the agreement was believed to be accidental from another line of evidence. Since sunspots are about 1,500 degrees Centigrade cooler than the surface of the sun surrounding them, they should contain less ionized thorium and consequently more of the neutral atoms. Hence, if the lines really belonged to

thorium, they should be strengthened in the spectrum of sunspots. But since the lines were not strengthened in the sunspot spectrum the investigators were forced to reject the coincidences as accidental.

*Science News Letter, March 6, 1943*

## NUTRITION

## Breakfast To Prevent Mid-Morning Fatigue

► **THE REASON** so many people get tired at 11 a.m. and 4 p.m. and feel weak and trembly is that the American people have gotten out of the habit of eating a good breakfast and a good lunch, Dr. Russell M. Wilder, of the Mayo Clinic, told the Congress on Industrial Health sponsored by the American Medical Association in Chicago.

Fruit, jam on toast and coffee is a bad breakfast, Dr. Wilder declared. Such a breakfast throws sugar into an empty stomach, the sugar gets into the blood quickly, and gets used up quickly. Then comes a drop of sugar in the blood, with a tired, weak feeling that people are likely to try to overcome with more sugar in the form of soft drinks or candy.

When you skimp on one meal, you must make up for the deficiencies of vitamins and other nourishment at the next meal, or your body does not get enough nourishment. People who skimp on breakfast, however, usually also skimp on lunch, Dr. Wilder pointed out. That leaves only dinner to supply almost all of the day's nourishment.

Breakfast, he said, should start with a source of vitamin C and some sugar in the form of fruit. Next, it should furnish the B vitamins. This can be done by a satisfactory portion of whole grain cereal or whole grain or enriched bread. If the bread is toasted, it should be only lightly toasted as much heat will destroy the vitamins.

Breakfast should have some fat in it, because fat delays the emptying of the stomach and prevents the sugar from getting to the blood so fast. Therefore include butter or oleomargarine enriched with vitamin A. It should also have some proteins, which can come from an egg or meat. The egg also supplies some fat. Finally, it should have a source of calcium, which is furnished by milk. Coffee adds nothing to the body's nourishment, so Dr. Wilder suggests that those who like coffee had better take it with hot milk to make sure of getting their milk.

*Science News Letter, March 6, 1943*

## MEDICINE

## Penicillin More Useful Through Chemical Treatment

► **PENICILLIN**, material from mold which has proved to be a potent weapon against disease germs, can be made even more useful for treatment of disease by chemical treatment, it appears from a report by Dr. Karl Meyer, Dr. Gladys L. Hobby and Dr. Eleanor Chaffee, of the College of Physicians and Surgeons, Columbia University, and Presbyterian Hospital, (*Science*, Feb. 26).

Penicillin has been difficult to use as a remedy, they point out, because it is an unstable compound and is rapidly excreted from the body. By the chemical process called esterification, however, the New York scientists have been able to overcome the difficulty caused by the instability of penicillin.

Very small doses of the ethyl ester of penicillin which they prepared gave mice complete protection against 20,000 to 100,000 lethal doses of hemolytic streptococci. Considerably larger amounts of penicillin itself were needed to achieve the same results.

The ethyl and methyl esters of penicillin are so much more stable than penicillin itself, preliminary experiments suggest, that it may be possible to give the remedy by mouth as well as by hypodermic injection.

*Science News Letter, March 6, 1943*

## MEDICINE

## Biotin Plays Role In Resistance to Malaria

► **THE DISCOVERY** that one of the vitamins, biotin, plays an important role in resistance to malaria is announced by Dr. William Trager, of the Rockefeller Institute for Medical Research at Princeton, N. J. (*Science*, Feb. 26).

Whether the discovery can be used to build a diet for making soldiers fighting in malaria regions and inhabitants of such regions more resistant to malaria cannot be stated at present. Dr. Trager's discovery was made in experiments with chickens and ducks and he does not know yet whether the findings apply to malaria in humans. They may, however, explain why some individuals are more susceptible to malaria than others.

When ducks and chickens were on a raw egg-white diet for two or three weeks to deplete their body stores of biotin, they developed a more severe malaria than chickens and ducks that

were not deficient in biotin. The number of malaria parasites in the biotin-deficient fowl after experimental inoculation rose to higher levels than in the controls, stayed at higher levels for several days longer, and more animals died of the malarial infection.

The greater susceptibility to malaria of the biotin-deficient fowl was not directly connected with any general weakness resulting from the deficiency, Dr. Trager found. Moreover, the deficiency which reduced resistance to malaria was not very severe. Chickens getting enough biotin, which is a growth factor, to grow well and to be quite normal except for a mild scaliness on the feet developed more severe malaria infections than chickens provided with more nearly adequate amounts of biotin.

*Science News Letter, March 6, 1943*

## INVENTION

## Magnets Speed Teaching Of Emergency Code

► **BY SLIDING** small alnico magnets around on a steel plate representing the earth, instructors now prepare panel code messages 200 times faster than formerly and hurry-up the training of Army flying cadets, report high-ranking officers of the Army Air Forces Advanced Flying School at Brooks Field, Texas.

When other means of communication is lacking or inadvisable, airmen rely on code patterns constructed on the ground by grouping rectangular pieces of canvas. Looking like rows of over-size stretchers, these code patterns can be read from a height of 10,000 feet.

To learn to read the signals, cadets studied model panels on a blackboard in ground school. The models are pinned and repinned in various code positions as many as a hundred times during a single class period, thus wasting much time.

Now a steel plate replaces the blackboard and alnico magnets, developed by the General Electric Company, serve as models. These can be shifted from one code pattern to another in only 1/200 of the time required to pin the old models.

Perhaps the first use of this ingenious method of classroom instruction was made by Dr. A. F. Blakeslee, at the Carnegie Institution of Washington laboratories at Cold Spring Harbor, N. Y. Years ago he hit upon the idea of sliding flat bar magnets about on an iron sheet to show his students the arrangement of chromosomes, the heredity-carrying bodies in living cells.

*Science News Letter, March 6, 1943*

# IN SCIENCE

## AGRICULTURE

## New School of Tropical Agriculture Being Built

► **A NEW SCHOOL** of tropical agriculture, to be known as the Escuela Agrícola Panamericana, is now being built in Honduras, on an endowment fund established by the United Fruit Company. It will be headed by Dr. Wilson Popenoe, well-known student of tropical plants and their uses. Generous provision is being made for scholarships to be granted to young men from Middle American republics.

One of the principal aims of the new institution will be the establishment in this hemisphere of cultivation centers for the production of tropical plant products hitherto imported from the Far East.

*Science News Letter, March 6, 1943*

## ZOOLOGY

## Zoologist Debunks Old American Snake Lore

► **RATTLESNAKE** lore comes in for a bit of debunking by Dr. Raymond B. Cowles of the University of California at Los Angeles. Rattlesnakes don't always warn before they strike, he declares. But they seldom, if ever, attack a man unprovoked. And they don't have to coil in order to strike.

"The old tale that the mate of a killed snake comes to avenge it," Dr. Cowles states, "is explained on the basis of scent. In the mating season, the trail of the snake killed may be readily followed. The revenge idea is nonsense."

Birds are not "hypnotized" by snakes, the California zoologist continues. Some birds "freeze" to avoid detection if an enemy approaches. That explains part of it. The rest may be due to birds' imperfect vision, which possibly makes them poor judges of distance, and hence tolerant of the approach of a snake.

King snakes do not attack and devour rattlesnakes as invariably as they are supposed to. But the California road-runner, a long-legged, aggressive bird, does prey on snakes.

*Science News Letter, March 6, 1943*



# WHEAT FIELDS

## AERONAUTICS

## New Torpedo Bombers Have Dual Purpose in Combat

See Front Cover

► THE AVENGERS, U. S. Navy's new torpedo bombers, are capable both of hedge-hopping waves for a torpedo attack and of flying high above enemy targets to drop tons of high explosives. They are carrier based.

An official U. S. Navy photograph of the Avenger is shown on the front cover of this week's SCIENCE NEWS LETTER.

The Avenger is made by Gruman and is heavily armed and armored.

*Science News Letter, March 6, 1943*

## ORNITHOLOGY

## Game Birds Use Weed Seed As Major Winter Food

► WEED SEEDS are turned into meat by game birds; they form the chief winter food of several species, studies by Philip S. Baumgras of the Michigan Department of Conservation indicate (*Journal of Wildlife Management*, January).

The bane of hayfever sufferers, low ragweed, turns out to have some use after all. It yields the biggest supply of winter seed for the birds, as indicated not only by a study of pheasant crop contents but by careful hand harvesting and weighing of ragweed seed from a number of typical Midwestern field environments. Wheat stubble fields were an especially rich source, yielding an average of 205 pounds an acre in October.

Other weed seed serving as winter food for wildlife species include foxtail grass, lambsquarters, black bindweed, smartweed, barnyard grass, finger grass, and pigweed.

Wild birds and small game animals are good gleaners of grain left in the field after harvest. In the fields studied by Mr. Baumgras there was an average of nearly seven bushels of corn left unpecked by the mechanical harvester. Most of this was salvaged by livestock; the remainder was used by wildlife.

Pheasants especially like corn, though it is not always the best food for them. Squirrels go after it, too, especially when the crop of acorns and beechnuts is short.

Wheat fields cut with a tractor-drawn binder yielded nearly two and one-half bushels of waste grain per acre, and oat fields a bushel more than that. This scattered grain was picked up mainly by starlings and blackbirds but to some extent by pheasants and ducks.

*Science News Letter, March 6, 1943*

## ASTRONOMY

## Million Mile Per Hour Gas Stream on Distant Star

► EVIDENCE that luminous hydrogen gas is streaming from a faint star known to astronomers as HD 242257 in the constellation of Auriga, the Charioteer, at the rate of 1,200,000 miles an hour, has been obtained by Dr. Paul W. Merrill of the Mount Wilson Observatory. If the sun were expanding with the same speed it would swell to the size of the earth's orbit in three days.

The evidence is based upon photographs of the spectrum of the star taken with the 100-inch reflecting telescope. Dr. Merrill suggests that possibly forces are at work in the atmosphere of the star similar in nature to those that cause sudden eruptions of vast clouds from the surface of our sun.

"So far as I am aware, no other star except a nova is known to be surrounded by an atmospheric shell of hydrogen expanding at so tremendous a rate," said Dr. Merrill.

*Science News Letter, March 6, 1943*

## INVENTION

## Bag for Throwing Grenades Invented for War Use

► A PATENT on a grenade-throwing bag has been issued to R. A. Dobbelaar of Plainfield, N. J. It is really an adaptation of the stone-and-sling with which David knocked out Goliath. The grenade is placed in a little bag with a drawstring, in the loop of which is a large wooden or plastic bead which rolls off the thrower's fingers, making it easy for the soldier to let go. The centrifugal effect of the overhand swing is claimed to give the throw greater range.

The long wooden stick of the German "potato-masher" grenade presumably gives the same effect, but it is stiffer to handle, awkward to carry, and interferes with accuracy of the missile's flight.

*Science News Letter, March 6, 1943*

## PHYSIOLOGY

## Carrot Diet for Flyers May Be in Offing

► A CARROT diet for high-altitude flyers may be in the offing, it appears from experiments reported by Dr. D. Nelson, Dr. S. Goetzl and Dr. A. C. Ivy of Northwestern University Medical School, Chicago, to the Society for Experimental Biology and Medicine. Dr. Ivy, now on leave from Northwestern, is scientific director of the Naval Medical Research Institute.

The experimenters kept a group of rats for 10 days on a diet of nothing but fresh carrots and tap water. They were then put in a low pressure chamber simulating the atmospheric conditions of 30,000 feet altitude for two hours. Of 107 carrot-fed rats, 85 survived the oxygen lack at this simulated high altitude, whereas only 23 of 107 rats on a normal diet survived.

The experimenters warn against conjecturing, from facts obtained under one condition of oxygen lack and altitude, what would happen in different conditions, but state that clear-cut results of acute studies are valuable in suggesting possibilities to be verified in chronic and less severe states.

Experiments are now under way to find what factors in carrots are responsible for their protective effect against high altitude oxygen lack.

*Science News Letter, March 6, 1943*

## GEOLOGY

## Evidence of Wet Spell 120 Million Years Ago

► EVIDENCE that there was a long wet spell between the second and third divisions of the Age of Dinosaurs (Jurassic and Cretaceous, to geologists) is found in the presence of widespread deposits of the fine clay known as kaolin in the Southwest, Dr. Luna B. Leopold of the University of New Mexico has pointed out (*Journal of Geology*). They seem to have been formed from the weathering of feldspar in extensive upland mountains, washed down into wide, shallow bodies of water, either freshwater lakes or arms of the sea.

Aside from its purely scientific interest as evidence of an ancient climate, these white, fine-grained deposits are of possible use in telling oil geologists when their borings have reached the boundary between two important oil-bearing systems of rocks.

*Science News Letter, March 6, 1943*

MEDICINE

# Conquering Cancer

War hampers research in this important field, but scientists have hope that out of the new accelerated work on nutrition, promising hints may come.

By JANE STAFFORD

► WAR may bring an increase in the death rate from cancer, but out of the war-accelerated research on nutrition may come new knowledge and even promising hints as to how this disease may be conquered.

This is the talk in scientific circles where cancer fighters discuss their plans and hopes as they will do occasionally when scientists and science writers meet to assay what progress is being made.

The increase in cancer deaths will be misleading unless the age distribution of the population is considered. The loss of young men through war casualties will result in a relative increase of the older age groups in the population, and it is in these older groups that cancer is most prevalent.



**CANCER**—The huge growth on this mouse is a cancer. That a virus-like substance may cause cancer in mice, man and other mammals is suggested by recent research.

The prospect of a depletion of the staffs of cancer research laboratories and cancer diagnostic and treatment hospitals and clinics has worried some cancer control authorities ever since Pearl Harbor.

For instance, some cancer research projects in England have already been abandoned or halted because of the war's demands on the time of physicians and medical scientists. The English, with two more years of war experience than we have had, apparently have taken or have had to take the view that it is more important to save lives now threatened by battle wounds or war plagues than to continue searching for a possible cure for cancer.

Even if the war curtails some planned cancer research programs, advances in the search for knowledge of how cancer develops and how to check it may nevertheless be made. As an example of this, there is the research just reported by Dr. Alfred Taylor, of the University of Texas, which comes pretty close to showing what many have long believed, that cancer in man and other mammals is caused by a virus.

He has isolated from breast cancers of mice a virus or virus-like principle which, when injected into other mice, produces cancers. A virus cause for a certain type of chicken tumor has long been known, but Dr. Taylor's work provides apparently the first clear-cut evidence of mammalian tumors being produced by injection of material that does not contain cancer cells.

## More Study Needed

Of course, much more work must be done before scientists will know for certain whether or not human cancer is caused by a virus, and if so, what can be done in the way of prevention or treatment. This probably significant discovery, however, was made during our first year at war and the circumstances show something of how other significant advances in the cancer fight might be made, even if some planned cancer research programs have to be curtailed during the war. For Dr. Taylor was not working at cancer research but in the field of nutrition.

His work was begun a month after Pearl Harbor when he was using large numbers of eggs in a study of the effects of vitamin lack on the growth and development of chick embryos.

Knowing that the yolk sac of the chick embryo had been used successfully to grow many disease-causing viruses, it occurred to Dr. Taylor that it might be possible to show the possible existence of a cancer-causing virus by using this material for its growth. So he turned from nutrition research to this cancer problem, and made the discovery just reported.

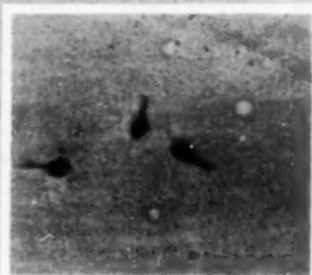
Nutrition research, which because of its direct relation to the war effort is likely to continue unabated, has provided other important leads on the cancer problem in recent years. Most people who have followed cancer news have read something about biotin. This is an important but little understood member of the vitamin B group. It is essential for the growth of yeast and other microorganisms. It is believed essential also for human nutrition, but its exact role is not yet known.

## Egg White Tried

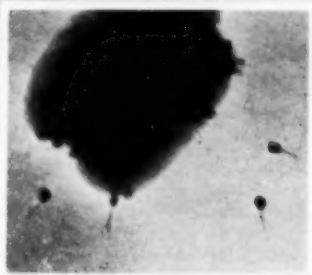
The finding of more biotin in cancerous tissues than in normal tissues focused attention on biotin as a possible factor in cancer, and even led to the suggestion that raw egg white, which contains an anti-biotin substance, might prove useful as a cancer remedy. Most cancer authorities who have investigated this last possibility see no ground now for considering raw egg white, or its anti-biotin chemical, avidin, as a cancer remedy.

Whether biotin holds any clue to solution of the cancer problem could be determined more readily and rapidly if there were more of it available. This chemical, however, is very difficult to extract from natural sources, so scientists in both nutrition and cancer research hailed a recent announcement from Prof. Vincent du Vigneaud and associates at Cornell Medical College. These scientists have worked out the structural chemical formula of biotin from which it is hoped synthesis of the vitamin and consequent ample supplies for research will soon follow.

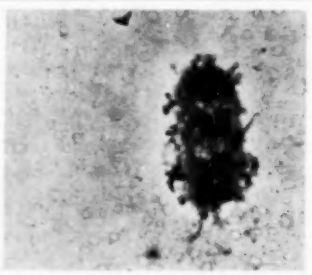
Cancer-fighting however, is pretty much of a 50-50 job. Scientists in the



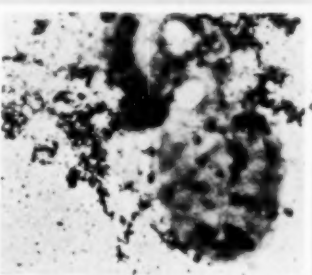
Bacteriophage moving about as they would in the bloodstream looking for bacteria to feed on. Magnified 23,000 times.



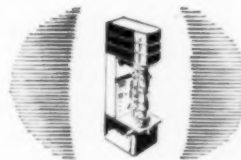
After ten minutes of bacteriophage attack on *Bacillus coli*. The bacteria begin to show signs of wear. Magnification 21,000 times.



The bacteria begin to disintegrate after twenty minutes of attack by the bacteriophage. Magnification 8,000 times.



Half an hour after the attack began, the bacteria are completely destroyed. Phage particles and bacterial debris litter the "battlefield." Magnification 15,000 times.



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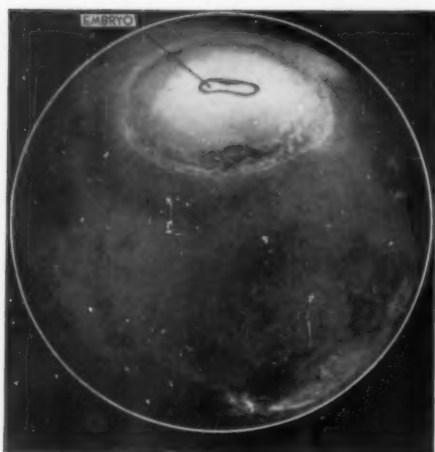


## ELECTRON MICROSCOPE

RCA Victor Division

RADIO CORPORATION OF AMERICA, Camden, N. J.





**FOOD FOR GERMS**—Studies of the vitamin needs of the chick embryo and knowledge that the yolk sac keeps disease viruses nourished and growing led to an important cancer discovery.

research laboratory cannot, at present, do all of it. Part of it depends on the physicians, surgeons and radiologists who diagnose and treat the condition. The other, very large part of cancer-fighting must be done by lay men and women.

Discussing the effects of war on the fight against cancer, Dr. C. C. Little, managing director of the American Society for the Control of Cancer, has warned that "women all over the country must realize that in all probability cancer will continue to kill 10 to 50 times more of them each year than will the missiles delivered by the enemy from the sea, land and air combined."

Success in treating cancer by methods now available, in other words, the can-

cer patient's chance for recovery, depends on early diagnosis and treatment. A good many men and women now know this but do not take the vital step of consulting a doctor when symptoms of possible cancer first develop. In a recent study of patients entering the New Haven Hospital or Tumor Clinic, it was found that more than half delayed consulting their doctor for over a month because they did not think their symptoms serious enough.

This shows that the first battle in the war on cancer must still be fought on the home front. Preventing unnecessary sickness, keeping well or taking prompt

steps to get well quickly are important ways of helping win the military war. Remember, therefore, the danger signals of cancer: the lump or changed appearance of the breast; the unusual bleeding; the persistent indigestion; the sore that does not heal promptly; the mole or blemish on the skin that gets bigger or is frequently cut or rubbed. Consult your doctor promptly about any of these symptoms. Just because you and he are busier than ever is no reason for putting off the consultation over such symptoms, nor for putting off the annual or semi-annual medical examination that might detect cancer.

*Science News Letter, March 6, 1943*

#### PSYCHOLOGY

## Specific Goal Needed

**Achievement of peace requires more adequate study of psychology of Americans and other peoples. We need to see day by day pattern of life ahead.**

► **INDIVIDUALISM**, the dominant trait of the American character today, as it was in Daniel Boone's time, is not enough by itself to see us through the present world conflict and help to build a post-war world fit to live in, Dr. Gardner Murphy, of the College of the City of New York, declared at the meeting of the American Orthopsychiatric Association in New York.

"The one thing that will carry us through now," he stated, "is a clear definition of the future to which we move. If our leaders cannot soon give us clearer and fuller objectives, we will have to make them up ourselves."

We must go beyond the Four Freedoms to a picture of the day by day pattern of our lives such that the life we see ahead is worth the cost, if we are to make the supreme sacrifices necessary to win the war and the peace.

"In every epoch of American history," Dr. Murphy reminded his audience, "men and women have been hard to budge, sure of themselves, until a direction was defined, a goal made clear. The issue in 1860 was a hodge podge of confusion. As one State after another seceded, the North hesitated. The one thing that carried the Union through those dark days of the Civil War was the simple and clear and ever repeated determination of Abraham Lincoln to save the Union no matter what the cost."

Analyzing the American character further to learn what can be expected of

us, Dr. Murphy said that we are individualists unwillingly turned into competitors who have also had grafted on our individualism a great deal of co-operativeness through clubs and social organizations, group work and democratically led camps and playgrounds.

Our American democracy is different from that of the Greeks, the Jews, the Dutch or other earlier organizers of democracy who were more community minded, Dr. Murphy pointed out. Most of us have only for an ideal the kind of democracy in which we struggle not for our individual selves but for a collective life shared by all. To act, however, as if that ideal were already among us in practice is, he said, unreal moralism which may do more harm than good.

The liberation of war energies among people such as we are, Dr. Murphy declared, is possible only by using an individualistic type of approach which shows clearly and constantly a type of world for which we as individuals are willing to make the supreme sacrifice. He concluded:

"The achievement of a peace in which not only safety but abundance of life will be made real is to a very large degree a question of more adequate study of our own psychology and that of other peoples."

*Science News Letter, March 6, 1943*

British soldiers are eating Idaho potatoes in North Africa.

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THE LANGUAGE OF  
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BY  
**PLAYING CARDS**

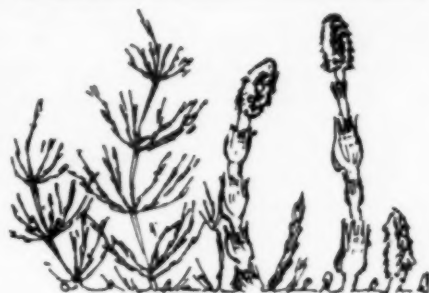


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The Gold Rush

► SOME LITTLE TIME ago, there was more or less of a to-do about the announcement of a Canadian mining engineer that he had found measurable quantities of gold in the curious jointed plant known variously as horsetail and scouring-rush. Repeated at second and third and 'teenth hand, the story came to be that the plant always had gold in it. Had that been the case, it would have been just too bad for the horsetails.

However, truth for once caught up with error, and the quaint growths are safe. The whole case is reviewed in the American Fern Journal by Dr. Ralph C. Benedict of the Brooklyn Botanic Garden.

The facts, according to Dr. Benedict, seem to be that at least one species of horsetail has a peculiar affinity for gold, and if it grows on ground where a little gold is present it will take it up in solution and store it in its tissues. When it is recalled that gold is one of the least soluble of all substances, and that the plant eventually comes to contain almost four and one-half ounces of the metal to a ton of horsetail, the efficiency of this biological "concentration plant" becomes apparent.

Prospectors are not interested, however, in horsetail as a source of gold in itself. It is thought of more as an indicator of the presence of gold; for of course if there is no gold in the soil the plant cannot concentrate it. The idea is to try to find out where the gold came from: whether it is in the ground on the spot, increasing in amounts as one digs down, or whether it was washed down in dissolved form from a deposit elsewhere. Then the game is to hunt for the "elsewhere" deposit.

For all of which, Dr. Benedict sug-

gests that we may want to change the name of the plant from scouring rush to "gold rush."

Why horsetail should pick up gold from the soil and store it in its tissues is a bit of a riddle. Apparently no exact experimental studies have been made on the subject, but it is suggested that the property is connected with the very high percentage of silica in the plant—the same stuff that gives it that harsh, glassy "feel" and made it a favorite in olden times for scrubbing table-tops and scouring pots and pans.

*Science News Letter, March 6, 1943*

## INVENTION

## Parachutes for Flares Can Now Be Made of Cellophane

► SMALL parachutes such as are used for dropping flares are to be made of molded transparent cellulose or rubber sheeting, under a system protected by patent 2,309,107 issued to G. E. Giroux of New York. The sheeting is cut in a flat blank, then heat-molded in a hemispherical form. The resultant parachute is light, and heat resistant.

*Science News Letter, March 6, 1943*

## A Complete Refresher Course in Industrial Chemistry

For the man who is changing over to an essential war job and for everyone who wants to familiarize himself with industrial chemistry, here is the best book, covering more than 50 key industries in which chemistry plays an important part.

# INDUSTRIAL CHEMISTRY

by **Emil Raymond Riegel**

Prof. of Industrial Chemistry, Univ. of Buffalo

The fourth revised edition of INDUSTRIAL CHEMISTRY is an authoritative, readable treatise that surveys all the important processes and practises of the chemical industries, used in producing the materials essential to our war effort. More than a textbook, it is written for the layman. This book is just the kind of orientation in the field of industrial chemistry that is

needed by every STUDENT, TEACHER, CHEMIST, PHYSICIST, ENGINEER, TECHNICAL and SCIENTIFIC WORKER. The style is "... sufficiently simple, so that a person who remembers his college (or even high school) chemistry would have little difficulty."

— James Stokley,  
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## PSYCHIATRY

# Advice Useful in Training

Induction of teen age men into Army increases need for adequate psychiatric guidance during early training period to salvage misfits.

► INDUCTION of 18-and 19-year-old young men into the Army increases the importance of having the advice of a psychiatrist available during the early training period, it is pointed out editorially by the scientific journal *Psychiatry* (November, 1942).

Young men in their teens are highly desirable for military service, the editorial states, because of their capacity for great exertion in emergencies, the recuperative power, and their amenability to moulding influences which can fuse them into a reliable solidarity of high morale and excellent discipline.

But when acute mental disorder does attack these young men the evil effects are greater than when older men are affected. Psychiatrists try to eliminate before induction all those likely to break under the strains of Army training and military life, but this is a difficult job to do well in the fifteen minutes or less allowed for the examination.

## May Make Good Soldiers

Bad psychiatric risks who have been accepted into the Army can often be made into good soldiers if some attention is given to their personal problems, Dr. Harry Stack Sullivan, former advisor to the Selective Service System and author of the editorial, explained.

Some boys going into the Army straight from school have suffered unfortunate experiences earlier in the schooling. Because of these early difficulties, they resent any later efforts to teach them anything. An experienced psychiatrist understands this situation

and knows how to handle it, but it is likely to baffle the ordinary drill sergeant. He cannot understand why he is not "connecting" with his problem students.

It will be better for the Army and also for the individuals if these problem boys in uniform are salvaged and turned into good soldiers, Dr. Sullivan indicated. It will also be a good thing for the nation. These boys taken from school do not have a chance to learn citizenship in the normal way through their relationships in industry and in the community. What they are when they get out of the Army again and go back to their own home town will depend mainly on the instruction and handling they get in the Army.

The psychiatrists selected for such advisory duty in replacement and training centers should be experienced men who know what they are doing, Dr. Sullivan said. Inexperienced or half-baked psychiatrists might be better than no psychiatrist in treating the very ill mentally—some of them can't be helped much anyway. But young soldiers should have the best available advice. The psychiatrists should be given special indoctrination in the Army for this work.

"They should not be expected to gallop right out of a child guidance clinic into the Army," he said.

"The problem of advising soldiers is a specialized one. The new school for Army Neuropsychiatry established at the Lawson General Hospital, Atlanta, Ga., under direction of Col. William C. Porter is a long step in the right direction."

*Science News Letter, March 6, 1943*

## ● RADIO

Saturday, March 13, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Esther Batchelder, chief of the Foods and Nutrition Division, U. S. Bureau of Home Economics, will talk on "Vitamins in our Daily Food."

Monday March 8, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"It's Human Nature" will be the subject of the program.

## INVENTION

## Two New Rifle Sights Intended to Improve Aim

► TWO NEW rifle sights, both of the kind that would probably be used by snipers and other special marksmen rather than in ordinary rough-and-tumble fighting have been invented.

One of them, protected by patent 3,310,929, is the invention of John Beresky of Brooklyn. It substitutes for the customary head or knife-edge front sight a device similar to the iris shutter of a camera. It is opened wide at the outset, to permit the rifleman to "frame" his target, then stopped down to a pinhole, to sharpen the aim just before he pressed the trigger. Adjustment is made by the thumb and forefinger of the left, or aiming hand.

The other sight, offered by Burr Lobdell of Cowdrey, Colo., for patent 2,311,186, interposes two small reflecting surfaces between the marksman's eye and the front sight, which have the effect of optically doubling the sighting base and thereby increasing accuracy.

*Science News Letter, March 6, 1943*

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## • New Machines and Gadgets •

✿ THE "COMPARATOR" is an inspection device used to examine acorn-sized commutators for dynamotors which power aircraft radio equipment. It contains a light bulb, two mirrors, and four magnifying lenses. With it women inspectors make sure that paper-thin strips of copper and mica are in perfect alignment.

Science News Letter, March 6, 1943

✿ DEHYDRATORS for home use, suitable for drying out vegetables and fruits, may be made at a small cost by using plans and instructions which are available without cost at any office of the U. S. Rural Electrification Administration. Non-critical material is used and house current furnishes the heat.

Science News Letter, March 6, 1943

✿ GLASS SHOWER BATHS, prefabricated and ready for installation, are on the market. Plate glass is used, fabricated with holes for plumbing outlets and installation screws. Translucent glass is available if desired.

Science News Letter, March 6, 1943

✿ SNAP FASTENERS, long used on clothes and upholstery covers, have been patented for a new use. They are set on the flattened surfaces of sliced off spheres. By snapping these units together complex groups are built up to demonstrate molecular structure to science students.

Science News Letter, March 6, 1943

✿ TRANSPARENT PLASTIC which screens out severe sunburn ultraviolet rays is being used in aircraft construction to protect pilots from disabling sunburns. Aviators have often returned from long flights at high altitudes with severe burns because the rays pass through the plastic coverings now used.

Science News Letter, March 6, 1943

✿ A NEW fire detector has been recently designed for military use. Sudden overheating of engines and extremes of climate often make ordinary detectors, which depend on temperature rise, impractical. The new device is actuated by flames rather than heat. Two organic filaments hold an electrical circuit open as illustrated in the photograph. At the slightest contact with flame these filaments are destroyed and the alarm circuit is closed. As an extra precaution, there is also a fixed-temperature thermo-



stat in the flame detector, but this is set high enough not to be affected by operating conditions.

Science News Letter, March 6, 1943

✿ AN ELECTRONIC clock counts pulsations of electric current and translates that count into correct time by means of lights. This ultra-modern timepiece, equipped with 170 electronic tubes, has no moving parts, no motors, wheels, main spring or hands.

Science News Letter, March 6, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 146.

### INVENTION

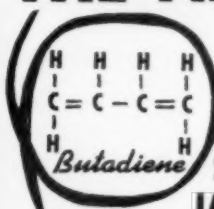
#### Adapter Permits Use of Low-Price Ammunition

► "LIVE" firing practice with the .45-caliber Thompson ("Tommy") submachine gun at low cost can be had through the use of a new adapter which permits the substitution of .22-caliber ammunition for the much more expensive pistol cartridges normally fired in the weapon. The adapter, invented by C. William Robbins of Cincinnati, consists chiefly of a .22-caliber barrel inserted down the larger bore of the submachine gun, and a magazine to carry the smaller caliber long-rifle cartridges. Thus equipped, the gun can be fired either semi- or full-automatic, just as it can with its normal ammunition.

The Robbins adapter is described by Lieut. Col. Calvin Goddard (*Army Ordnance*, Jan.-Feb.).

Science News Letter, March 6, 1943

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# First Glances at New Books

► **INSECTS** and what to do about them are almost as sure-fire a topic of conversation as the weather. Interest does not flag in Anthony Standen's **INSECT INVADERS**: the author presents just about all the facts one ordinarily finds in a dry-as-dust tome on economic entomology, but keeps the manner as lively as a historical novel or a good popular biography. Illustrations are excellent. (*Houghton Mifflin*, \$3.50.)

*Science News Letter, March 6, 1943*

► **BOTANISTS IN THE MIDWEST**, and indeed over the nation generally,

will welcome the new **FIELDBOOK OF NATIVE ILLINOIS SHRUBS**, by Leo R. Tehon. The species are well described and "keyed out," the line drawings and colored illustrations will aid in making identifications. All round, it is a good book to slip into your pocket when you go walking (*State of Illinois, Natural History Survey Division*, \$1.25).

*Science News Letter, March 6, 1943*

► **FASCINATING NEW HORIZONS** suddenly open out before the boy or girl who first begins to peer through a microscope. In **FUN WITH YOUR MICROSCOPE**,

Raymond F. Yates gives many practical hints to young microscopists, even showing them how to make photomicrographs and how to build a simple microprojector. (*Appleton-Century*, \$2.)

*Science News Letter, March 6, 1943*

► **THE GARMENT OF GOD** is a book of essays on the influence of nature in human experience by John C. Merriam, retired president of the Carnegie Institution of Washington, who has thought long and carefully on this subject. (*Scribner's*, \$2.)

*Science News Letter, March 6, 1943*

## • Just Off the Press •

**AIR NEWS YEARBOOK**—Phillip Andrews, editor—*Duell, Sloan & Pearce*, 264 p., illus., \$3.75. Beautifully illustrated book, compiled by editor of Air News magazine, showing plane types of the different fighting countries.

**BASIC ELECTRICITY**—John L. Feirer and Ralph O. Williams—*Manual Arts Press*, 244 p., illus., \$1.92. A pre-induction training course.

**BUILD IT YOURSELF! A Hundred Good Ideas for Making your Home More Comfortable**—Michael Rothman—*Greenberg*, 140 p., illus., \$1.75.

**COLEOPTERA: TENEBRIONIDAE**—Frank E. Blaisdell, Sr.—*California Academy of Sciences*, 287 p., 2 plates, \$1.50. Proceedings of the California Academy of Sciences fourth series—Contributions Toward a Knowledge of the Insect Fauna of Lower California.

**COLLEGE PHYSICS**—Henry A. Perkins—*Prentice-Hall*, 802 p., illus., \$4.50. Revised edition. Textbook.

**DIFFERENTIAL EQUATIONS**—Harry W. Reddick—*Wiley*, 245 p., illus., \$2.50. Textbook.

**FIELDBOOK OF NATIVE ILLINOIS SHRUBS**—Leo R. Tehon—*State of Illinois*, 307 p., illus., \$1.25. Natural History Survey Division, Manual 3.

**FUN WITH YOUR MICROSCOPE**—Raymond F. Yates—*Appleton-Century*, 150 p., illus., \$2. For young scientists.

**FUNDAMENTAL SHOP TRAINING: For Those Preparing for War Service**—John T. Shuman, Bailey Wright, and James Ritchey—*American Technical Society*, 327 p., illus., \$2. A pre-induction training course.

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Clark, Frederick Russell Gorton, Francis W. Sears, Francis C. Crotty—*Houghton, Mifflin*, 300 p., illus., \$1.24. A pre-induction training course.

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**GEORGE WESTINGHOUSE: Fabulous Inventor**—H. Gordon Garbedian—*Dodd, Mead*, 235 p., illus., \$2.50.

**A GUIDE TO CATHODE RAY PATTERNS**—Merwyn Bly—*Wiley*, 39 p., illus., \$1.50. "A summary of cathode ray pattern types encountered in the usual course of laboratory and test bench work". Paper bound.

**MANAGEMENT OF SMALL ARTIFICIAL LAKES: A summary of Fisheries Investigations, 1938-1942**—George W. Bennett—*State of Illinois*, 24 p., illus., free upon direct application to the Illinois Natural History Survey, Urbana, Illinois. (Bulletin of the Illinois Natural History Survey, vol. 22, article 3.)

**MASTER MARINER: The Life and Voyages of Amasa Delano**—James B. Connolly—*Doubleday, Doran*, 324 p., \$3.

**MENDING MEN'S SUITS**—Clarice L. Scott and Anne F. Hagood—*Gov't Print. Off.*, 23 p., illus., 10c. (U. S. Department of Agriculture Miscellaneous Publication No. 482.) Welcome and timely instructions for conservation-minded women.

**THE NATIVE PEOPLES OF NEW GUINEA**—M. W. Stirling—*Smithsonian Institution*, 25 p., 28 plates. Free upon direct application to the Smithsonian Institution. (Smithsonian Institution War Background Studies Number Nine.)

**NICHOLAS COPERNICUS 1543-1943**—Stephen P. Mizwa—*Kosciuszko Foundation*, 88 p., illus., 75c. Pamphlet bound.

**OFFICIAL PUBLICATIONS OF PRESENT-DAY GERMANY: Government, corporate organizations and National Socialist Party, with**

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**TABLES OF DATA ON CHEMICAL COMPOSITIONS, PHYSICAL AND MECHANICAL PROPERTIES OF WROUGHT CORROSION-RESISTING AND HEAT-RESISTING CHROMIUM AND CHROMIUM-NICKEL STEELS**—A. S. T. M. Committee A-10 on Iron-Chromium, Iron-Chromium-Nickel, and Related Alloys—*American Society for Testing Materials*, 43 p., charts, \$1.25.

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